IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appellant   :   Edwin C. Iliff

App. No   :   09/785,044

Filed   :   February 14, 2001

For   :   AUTOMATED DIAGNOSTIC
                SYSTEM AND METHOD
                INCLUDING REUSE OF
                DIAGNOSTIC OBJECTS

Examiner   :   Srirama Channavajjala

Art Unit   :   2166

REPLY TO EXAMINER'S ANSWER

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

      This Reply Brief is in response to the Examiner's Answer mailed June 30, 2008 and the Supplemental Examiner's Answer mailed August 28, 2008 in the above-captioned application. Appellant understands that the purpose of the Supplemental Answer was to correct an inadvertently added new rejection to Claims 1-5, 11-19, 43-48, and 52. Appellant does not note any other differences between the Examiner's Answer and the Supplemental Examiner's Answer (collectively "Examiner's Answer").

Summary of Response

In the Examiner's Answer, the Examiner maintains the rejection of the pending claims, including independent Claims 1, 6, and 9, and 11, and dependent Claims 2-5, 7-8, 10, and 12-52 (which were specifically addressed in the opening brief):

(1) The Examiner maintains that the subject matter of each of Claims 6-10, 20-42 and 49-51 do not constitute patentable subject matter under 35 U.S.C. § 101.

(2) The Examiner maintains that Claims 48-49 and 51-52 fail to comply with the written description requirements of 35 U.S.C. § 112¶1.

(3) The Examiner maintains that the subject matter of each of Claims 6-9, 20-27, 29-38, 40-42, and 49-51 is anticipated by U.S. Patent No. 5,868,669.

(4) The Examiner maintains that: the subject matter of each of Claims 1, 3-5, 10-13, 15-19, 43-48 and 52 is obvious over U.S. Patent No. 5,868,669, in view of U.S. Patent No. 6,149,585; the subject matter of Claims 2 and 14 is obvious over U.S. Patent No. 5,868,669 in view of U.S. Patent No. 6,149,585 in further view of U.S. Patent No. 6,598,035; and, the subject matter of Claims 28 and 39 is obvious over U.S. Patent No. 5,868,669 in view of U.S. Patent No. 6,598,035.

Appellant addresses each of the above items in the remarks below.

REMARKS

I. Claims 6-10, 20-42, And 49-51 Recite Patentable Subject Matter

In the Examiner's Answer, it is maintained that Claims 6-10, 20-42, and 49-51 constitute unpatentable subject matter under U.S.C. § 101. In maintaining the rejection, it appears that the Examiner recognizes that the subject matter of independent Claims 6 and 9 is directed to a machine, but argues that "whether a claim recites a machine implemented process is not determinative of whether that process claim is statutory."[1] The Examiner further states that as in *Gottschalk*, Claims 6 and 9 are "so abstract and sweeping as to cover both known and unknown uses of the underlying 'software algorithm'." Appellant respectfully disagrees.

Appellant disagrees with the Examiner assertion that "claims 6, 9 in the instant application (software routines or merely algorithms) share the same characteristics as the claims in *Gottshcalk* [sic]." *Gottschalk*'s claims were an attempt to preempt a mathematical equation, directed to a method of converting binary-coded-decimal (BCD) numerals into pure binary numerals (i.e., pure mathematical equations). As stated by the Court in *Gottschalk*, "the claims were not limited to any particular art or technology, to any particular apparatus or machinery, or to any particular end use." Claims 6 and 9 do not have such deficiencies. First, the claims are specifically limited to the art of medical diagnosis. Second, the claims are directed to machines capable of running the recited objects. Third, the claims are limited to the particular end use of outputting a patient diagnosis. Accordingly, Appellant disagrees with the similarities drawn by the Examiner between Claims 6 and 9 and the claims recited in *Gottschalk*.

Further, unlike *Gottschalk*, Claims 6 and 9 encompass a computer-implemented system that is useful and accomplishes a practical application. That is, it produces a "useful, concrete and tangible result."

An invention is "useful" if it satisfies the utility requirement of Section 101.[2] The utility requirement provides that the utility of an invention must be (i) specific, (ii) substantial and (iii) credible.[3] The requirement whereby a claim must have specific and substantial utility excludes "throw-away," "insubstantial," or "nonspecific" uses, e.g., using a complex machine as a paperweight. The utility of the subject matter of Claims 6 and 9 is that it is directed to a machine

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[1] Examiner's Supplemental Answer, pg. 20.

[2] MPEP 2106(IV)(C)(2)(2)(a), 8th Edition, Revision 6 (September 2007).

[3] MPEP § 2107 and Fisher, 421 F.3d at 1372, 76 USPQ2d at 1230 (citing the Utility Guidelines with approval for interpretation of "specific" and "substantial").

capable of providing a patient diagnosis. This utility is specific and substantial and does not encompass a "throw-away" use. Further, the MPEP states if an Applicant asserts that if the claimed invention is useful for a particular purpose (i.e., has a "specific and substantial utility") and there has been no question of the credibility of this statement, the invention fulfills the "utility" requirement. [4]   As Appellant has asserted that the claimed invention is useful for a particular purpose (i.e., has a "specific and substantial utility") and there has been no question of the credibility of this statement, Claims 6 and 9 are useful under the "utility" requirement of Section 101.

For an invention to be "tangible," a claim must set forth a practical application to produce a real-world result.[5] In other words, the result must not be "abstract."[6] Claims 6 and 9 describe a machine capable of producing a diagnosis of a patient's medical condition based on an analysis of symptoms. Such a diagnosis is required by the practice of medicine and must be established before a treatment is prescribed to improve or stabilize the patient's medical condition. Adequate healthcare resulting from a satisfactory diagnosis is essential for modern society, as is the use of computers and software to facilitate this good. The analysis of the patient symptoms is a practical application of the computer implemented system designed to produce a real-world result, a patient diagnosis, and cannot be considered an abstract application. Accordingly, the inventions embodied by Claims 6 and 9 are tangible.

A concrete result is one that can be substantially repeatable.[7] The question of whether an invention produces a "concrete" result arises when a result cannot be assured.[8] There is no such question in the instant case. The diagnostic objects of Claim 6, when presented with identical parametric input, will produce identical results. Accordingly, the inventions of Claim 6 and 9 produce a "concrete" result as the result is substantially repeatable.

Claims 6 and 9 encompass a "computer-based medical diagnostic system" that "outputs a diagnosis of a patient." Appellant respectfully submits that this computer-implemented system constitutes a "machine" producing a useful, tangible, and concrete result under 35 U.S.C. § 101.

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4 MPEP 2107(II)(B)(1) 8th Edition, Revision 6 (September 2007) ("[i]f the applicant has asserted that the claimed invention is useful for any particular practical purpose (i.e., it has a "specific and substantial utility") and the assertion would be considered credible by a person of ordinary skill in the art, do not impose a rejection based on lack of utility").

5 MPEP 2106(IV)(C)(2)(2)(b), 8th Edition, Revision 6 (September 2007) (citing *Gottschalk v. Benson*, 409 U.S. 63, 71-72 (1972) (invention ineligible because had "no substantial practical application.").

6 *Id.*

7 MPEP 2106(IV)(C)(2)(2)(c), 8th Edition, Revision 6 (September 2007).

8 Id. (citing *In re Swartz*, 232 f.3d 862, 864 (Fed. Cir. 2000)).

Accordingly, the invention of Claim 6 constitutes protectible subject matter under 35 U.S.C. §101.

In view of the foregoing, Appellant respectfully requests reconsideration and withdrawal of the rejection of Claims 6-10, 20-42, and 49-51.

II. Claims 48-49 And 51-52 Have Explicit Written Description Support

The Examiner argues that as each disease object is selected/invoked by the system, it cannot be selected/invoked by a disease object. Appellant respectfully disagrees.

Appellant respectfully disagrees with that Examiner's contention that the limitation, whereby "each disease object is elected/invoked by the system," is incompatible with the limitation, whereby "the disease object directly invokes another disease object." The Examiner ignores the explicit support present in the disclosure for the limitation whereby "the disease object directly invokes another disease object." Paragraph [0084] recites "the Appendicitis Disease Object now invokes another disease object that is an expert in, say, Small Bowel Obstruction. That object takes a look, asks some questions, and passes the patient on to still other disease objects." In the example, the Appendicitis Disease Object is unable to provide a diagnosis based on the patient data. That disease object then invokes another disease object to resolve the symptoms. If that disease object is unable to provide a diagnosis, that object takes a look, asks some questions, and passes the patient on to still other disease objects. As such, the disclosure provides explicit support for one disease object selecting/invoking another disease object. Appellant respectfully submits that the disclosure of the specification describes the claimed invention in sufficient detail that one skilled in the art can reasonably conclude that the inventor had possession of the claimed invention.

In view of the foregoing, Appellant respectfully requests reconsideration and withdrawal of the rejection of Claims 48-49 and 51-52.

III. Claims 6-9, 20-27, 29-38, 40-42, And 49-51 Are Novel Under 35 USC § 102(B)

A. **The Iliff reference does not disclose the features of Claim 6, including the particular objects recited and "objects"**

The Examiner states that the particular objects in independent Claim 6 lack novelty. The Examiner argues that the Iliff reference anticipates "a disease object, a symptom object, a valuator object, a question object, a node object and a candidates object, wherein the objects are arranged in a hierarchical relationship such that the result of one of the objects is input to another of the objects," as recited in Claim 6. Appellant respectfully disagrees.

Appellant did not find any disclosure in the Iliff reference of the particular objects recited in independent Claim 6. Further, the Examiner did not cite a portion of the reference or explain how the particular objects claimed (e.g., a valuator object, a question object, a node object and a candidates object, etc.) are disclosed in the reference, besides that broad statement. Thus, Applicants respectfully submit that the reference does not disclose the particular objects recited in Claim 6.

Alternatively argued, in the Appeal Brief, Appellant stated that that "programming in C++ is not the same thing as specifying the diagnostic objects." The Examiner simply disagreed. However, the Examiner did correctly say that "Programming in an object oriented language such as C++ is a general technological tool (emphasis added)."

In the terminology section of the specification, an object is defined as a "combination of data and processes that manipulate data..." See, e.g., Paragraph [0082]. Furthermore, "the object is said to "hide" data; it provides the powerful ability of decoupling the world that uses an object from the object itself." See, e.g., Specification, Paragraph [0089].

C/C++ are tools used to generate software code (that can include objects). Objects are related to, but not the same as C++.

Given that the technology may be the preventing this argument from being persuasive to the Examiner in this alternative argument, Appellant provides an analogy as an explanation to persuade the Examiner to remove these rejections. This analogy is simply for the purposes of explanation, and does not eliminate Appellant other arguments (e.g., particular claimed objects are not recited). This analogy uses tools (which Examiner admits C++ is an example of), and products of those tools (e.g., objects): A hammer [e.g., C++ programming] is a tool used to build a house [e.g., an object]. But a hammer [e.g., C++ programming] isn't the same as a house [e.g.,

an object]. Thus, the reference's disclosure of C++ does not disclose objects as defined in the Specification.

B.   The Iliff reference does not disclose the invoking feature of Claim 6

An additional reason why independent Claim 6 is novel, is recited in the following claimed feature: "at least one of the **diagnostic objects directly invokes another of the diagnostic objects** in a computer-based medical diagnostic system."

In the Examiner's Answer, the Examiner cites the Iliff reference column 39, lines 61-67 as allegedly disclosing that a "migraine object directly invokes related migraine symptom/questions objects." However, the reference does not actually disclose this, or anything about a migraine object invoking another object. In reality, the cited section of the reference says:

> "The MDATA system 100 is knowledgeable about the difference
> between classic, common, and all other variants of migraine, but
> for this discussion the general term "migraine" will be used. After
> reordering the first list and placing migraine at the top, the
> MDATA system 100 then asks several questions related
> specifically to migraine headaches. These are called the "migraine
> screening questions"." Col. 39, ln. 61-67.

As shown in the cited portion of the reference, there are no symptom objects or question objects (where objects are defined by Appellant's Specification as previously discussed above). Thus, the Examiner's cited section does not support his proposition. Further, the claimed "diagnostic objects directly invokes another of the diagnostic objects" feature is novel.

C. The Iliff reference does not disclose the features of Claim 9, including the particular objects recited and "objects" as defined by Specification

This section addresses the rejection of independent Claim 9 under § 102(b). In the Examiner's Answer, similar reasoning is given in this section as given in Section c) of the Examiner's Answer in relation to Claim 6. Appellant respectfully submits that Claim 9 is novel over the reference for at least the reasons above related to Claim 6 (e.g., the Iliff reference does not disclose the features of Claim 9, including the particular objects recited and "objects" as defined by Specification).

D. The Iliff reference does not disclose the invoking feature of Claim 9

This section addresses the rejection of independent Claim 9 under § 102(b). In the Examiner's Answer, similar reasoning is given as in Section d) of the Examiner's Answer in relation to Claim 6. Appellant respectfully submits that Claim 9 is novel over the reference for at least the reasons above related to Claim 6 (e.g., the Iliff reference does not disclose the invoking feature of Claim 9).

In view of the foregoing, Appellant respectfully requests reconsideration and withdrawal of the rejection of Claims 6-9, 20-27, 29-38, 40-42, and 49-51.

IV. Claims 1, 3-5, 10-13, 15-19, 43-48 And 52 Are Nonobvious

A. The Iliff reference does not disclose the features of Claims 1 and 11, including the 'selecting a disease' feature and the 'invoking' feature

Claim 1 recites "selecting a disease object applicable to a patient." In the Examiner's Answer, for the "selecting a disease" feature, the Examiner cites a section of the reference that gives a listing of diagnosis (but these are not disease objects). The reference section recites:

> "Based upon the answers to the diagnostic screening questions, the MDATA system 100 reorders the first list. The first list then becomes a list of the possible causes of headache in decreasing levels of probability in the patient seeking consultation. The first list is now patient specific. If the MDATA system 100 concludes that migraine is the most likely cause of the patient's headache, then migraine will now be ranked at the top of the first list." Col. 39, ln. 53-60.

Thus, the reference does not disclose selecting a disease object.

Further, Claim 1 recites "invoking a preferred symptom object or one of the related alternative symptom objects for the selected disease object so as to output a diagnosis of a patient based on the object invocation." For this invoking feature, the Examiner simply says "Iliff also suggests migraine object directly invokes migraine symptom/question objects as detailed in col 39, line[s] 61-67." However, as discussed in section d) above, the cited section of the reference does not disclose a migraine object invoking another object.

B. The Iliff reference does not disclose the features of Claims 1 and 11, including the particular objects recited and "objects" as defined by Specification[9]

This section addresses the rejection of independent Claims 1 and 11 under 103(a). In the Examiner's Answer, a similar reasoning is given as in Section c) of the Examiner's Answer in relation to Claim 6. Appellant respectfully submits that Claims 1 and 11 are novel and nonobvious over the reference for at least the reasons above related to Claims 6 and 9 (e.g., the Iliff reference does not disclose the features of Claims 1 and 11, including the particular objects recited and "objects" as defined by Specification).

C. The Iliff reference does not disclose the features of Claims 1 and 11, including the archived symptom objects feature[10]

This section addresses the contention whether the reference discloses the "archived symptom objects" feature recited in Claim 1: "assigning a weight for each symptom, wherein a particular disease object includes a preferred weight for one or more preferred symptoms and an alternative weight for one or more related alternative symptoms, wherein the alternative symptoms for a particular preferred symptom are selected from a set of **archived symptom objects** that are available for reuse."

In the Examiner's Answer, the Examiner states that archived symptom objects are taught in Figure 6 of the Iliff reference through the patient's medical history database 268 and column 38 lines 55-64 as allegedly discussing past medical history.

First, an object as defined by the Specification is not a database. As discussed above, the Specification defines an object as a "combination of data and processes that manipulate data..." See, e.g., Specification, Paragraph [0082]. Thus, a database is not an object as defined by Appellant's specification.

Second, Claims 1 and 11 have the invoking feature discussed above in Section d), which is similarly not discussed by the Iliff reference.

In view of the foregoing, Appellant respectfully requests reconsideration and withdrawal of the rejection of Claims 1, 3-5, 10-13, 15-19, 43-48 and 52.

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[9] This subsection of the Reply Brief responds to pages 27-28 of the Examiner's Answer.
[10] This subsection of the Reply Brief responds to pages 28-29 of the Examiner's Answer.
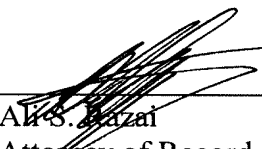
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Please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11-1410.

Respectfully submitted,

KNOBBE, MARTENS, OLSON & BEAR, LLP

Dated: September 2, 2008

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